DEPARTMENT OF CONSERVATION

Managing California's Working Lands

DIVISION OF OIL, GAS, & GEOTHERMAL RESOURCES

4800 STOCKDALE HIGHWAY • SUITE 417 • BAKERSFIELD, CALIFORNIA 93309

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September 19, 2012

George Robin
Engineer, UIC Program
US EPA Region 9
Ground Water Office, WTR-9
75 Hawthorne St.
San Francisco, CA 94105

WATER DISPOSAL PROJECT
Round Mountain Field
Vedder/Walker Zone
Macpherson Oil Co.
WD-7, API # 03033731
Sec. 18, T.28S, R.29E

Project Code: **62809014**

NOTICE OF SIGNIFICANT NONCOMPLIANCE

Dear Mr. Robin:

A RA Tracer survey was conducted and witnessed by the Division of Oil, Gas and Geothermal Resources (Division) on the water disposal well WD-7 operated by Macpherson Oil Company, API # 03033731, located in Sec. 18, T.28S, R.29E, in the Main area of Round Mountain oil field on September 13, 2012.

The approved injection zone is the Vedder/Walker. The top of Walker is 2579', top of Vedder is 2270', top of Pyramid Hill is 2130', top of Freeman-Jewett is 1403', and Olcese is 1403' to surface. The casing is 16" cemented to 93', 9 5/8" cemented to 2573', and a 7" liner landed 2520' to 3450', perforated 2554' to 3450', Total Depth 3477'. During the drilling of the well, there were no returns from 2182' to 2577' despite pumping a lost circulation material pill. The 9 5/8" casing was cemented with 1,263 cubic feet class G cement with no returns to the surface. The well was then drilled to 3477' with continued lost circulation problems and the liner was hung. A cement bond log was not ran and a top cement job or other remediation cementing was not performed on the 9 5/8" casing. Injection down casing was approved by the Division without a tubing and packer.

A RA Tracer survey on March 5, 2011 indicated no problems and a SAPT ran on April 29, 2009 indicated the casing had integrity. However, the RA Tracer survey conducted on September 13, 2012 indicated casing holes at 580'-590', 625'-645', 770'-787' and 810'-815'. The survey also indicated that out of the estimated 19,600 BPD going into the well, only 3,410 BPD went below 2554' (top slot of the 7" liner). A rate of 16,190 BPD was being lost at shallow depths into the Olcese at 580'-815'.

Freshwater in the Main area of the Round Mountain oil field exists from the top of the aquifer near surface through the producing zones. The Vedder T.D.S. is 1,800 ppm and the Jewett T.D.S. is 2,700 ppm. The Olcese T.D.S. is 2,693 ppm in the Sharktooth area of Round Mountain. The Olcese is included in the injection zone for a water disposal project in Sections 17 and 19, T.28S, R.29E portion of the Main area and is the injection zone for a water disposal project in the Sharktooth area. The Olcese T.D.S. in the Main area is not known but is certainly below 3,000 ppm. Documentation that the non-hydrocarbon bearing Olcese was given exempt status is

provided in the attached Division documents. Unfortunately, documentation from EPA granting that exemption is not available.

Given the above uncertainty of the exempt status of the Olcese, and that the Olcese is not approved as an injection zone in the Vedder/Walker water disposal project for Macpherson Oil Co., the lost of injection fluid through casing holes into the Olcese is considered by the Division to be a Significant NonCompliance occurrence. The following actions have been taken relevant to migration outside casing invading a USDW:

1) Injection was ceased immediately upon finding the casing holes during the RA Tracer survey on September 13, 2012.
2) The operator is conducting an investigation to determine if a USDW has been degraded. The liner of the well will be sanded back and fluid samples will be obtained from the Olcese. A geochemical analysis and total petroleum hydrocarbons (T.PH.) will be conducted on the Olcese sample.
3) When the T.D.S. and T.P.H. of the sample fluid from the Olcese are known, a determination will be made by the Division whether the Olcese zone fluids have been degraded and what further action may be needed.
4) A cement bond log was run on September 17, 2012 to determine the top of cement in the 9 5/8" annulus. It was found that there is no cement in the annulus of the 9 5/8" casing, most likely due to the lost circulation problem.
5) The Olcese may be de-saturated at the depth of the casing holes. The sampling operation may provide evidence of whether injected fluid can be recovered.
6) According to the operator, the injection pressure dropped from 50 psi to 0 psi in April, 2012. This may have been the time that the holes developed.
7) A notice of intention to rework has been submitted to the Division to cement a 7" inner casing from surface to 2520'. The 9 5/8" casing annular cement remediation will be a condition of the permit.
8) A casing integrity test will be conducted while the rig is still on site. A RA Tracer survey will be due within 90 days of injection. With two protective casing strings, a tubing/packer will not be required for the well.

If you have any questions, please call Mark Gamache at (661) 334-3656.

Sincerely,

Burton R. Ellison

Burton R. Ellison
Deputy Supervisor

cc: RWQCB, UIC file, Jerry Salera, Dan Wermiel

STATE OF CALIFORNIA—RESOURCES AGENCY George Deukmejian, Governor

DEPARTMENT OF CONSERVATION
DIVISION OF OIL AND GAS
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(805) 322-4031

Mr. Donald R. Macpherson, Jr.
MACPHERSON OIL COMPANY
P.O. Box 5368
Oildale, CA. 93388

June 16, 1983

Gentlemen,

As a result of an appeal made by the Division of Oil and Gas to the Environmental Protection Agency regarding the non-exempt status of the Olcese Zone, Round Mountain field, the previous ruling has been overturned and the currently approved injection intervals in this zone have been exempted for the reinjection of produced oilfield water. This appeal could not have been made and won without your help and we wish to extend our appreciation for your efforts.

The September 14, 1984 deadline for the termination of injection into this zone is therefore rescinded and injection may continue under the prior D.O.G. permit. Should there be any further rulings which may affect any of your underground injection projects, you will be notified.

Yours Truly,

David Mitchell

David Mitchell
Associate Oil and Gas Engineer

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IELD, CALIFORNIA 93305
322-4031

EDMUND G. BROWN JR., Governor

Mr. Donald R. Macpherson, Jr.
MACPHERSON OIL COMPANY
P.O. Box 5368
Oildale, CA. 93388

April 4, 1983

Gentlemen,

On March 14, 1983, the California Division of Oil and Gas recieved primacy over Class II injection wells under the Federal U.I.C. program. This primacy enables the D.O.G. to retain regulatory control over the reinjection of produced oilfield water with certain imposed restrictions and changes. Among these restrictions are non-exempt aquifers which have previously been approved for injection.

Under the new regulations, all injection into these non-exempt aquifers must cease by September 14, 1984. One of these zones is the Olcese zone in Round Mountain field for which our records show you have a currently approved water disposal project.

Should you wish to appeal this decision by requesting aquifer exemption, you may submit an application addressing the attached list of requirements to this office. Your application will then be forwarded to the Environmental Protection Agency for review and decision. Should you choose not to file this information, all injection into the Olcese zone in Round Mountain field must be terminated prior to the September 14, 1984 deadline date.

If you have any questions, please contact this office.

Yours Truly,

A. G. Hluza
Deputy Supervisor

By David Mitchell
Associate Oil & Gas Engineer